Illinois Commerce Commission
Initiative on Plug-In Electric Vehicles

Workshop 4
Rates

January 27, 2011

I. Introduction and Background

The participating members of the Rates working group, which represent a diverse group of environmental, consumer, utility, Retail Electric Supplier (RES) and vehicle charging interests,[1] appreciate this opportunity to offer further comment and guidance to the Illinois Commerce Commission (Commission or ICC) regarding the use of electricity rates and pricing options to promote the efficient use of utility transmission and distribution systems and generation assets by owners of Plug-In Electric Vehicles (PEV). In its October 15, 2011 letter inviting stakeholders to participate in workshops, the ICC requested this working group to address the following questions and issues:

> **(4) Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging**
>
> Current statutory and/or regulatory barriers may impede broad availability of dynamic pricing options that could prevent negative systemic impacts from at home charging of PEVs at peak load times. The Commission would be interested in proposals for statutory solutions. If such solutions are needed, stakeholders may wish to provide an analysis and assessment of the potential for dynamic, real-time or time-of-use pricing to prevent or disincent home-charged PEVs from contributing to peak-load congestion and ancillary service power needs, otherwise negatively affecting energy efficiency and/or other programs, and generally increasing the need for existing generation, transmission or distribution system infrastructure upgrades. (ICC letter to Plug-In Electric Vehicle Initiative Stakeholders, Oct. 15, 2011).

II. Scope of the Report

The Rates working group defined "rate options" broadly to include both the tariffed electric supply service offered by utilities and the competitive retail supply offerings of Retail Electric Suppliers (RESs), as well as demand response and other load management programs that may be offered (now or in the future) by utilities, RESs or independent Curtailment Service Providers (CSP). While the team obtained initial clarification that

[1] The following organizations were actively represented on the Rates working group: ICC Staff; Citizens Utility Board; CNT Energy; Illinois Science & Technology Coalition; Natural Resources Defense Council; Environmental Law & Policy Center; Illinois Competitive Energy Association; Carbonday; Plug In Vehicle Solutions; MidAmerican Energy Co.; Ameren Illinois Utilities; and ComEd.

the focus of the Commission's inquiry was on residential customers, the scope was subsequently expanded to include non-residential customers as well as delivery service rates. Therefore, the original December 29, 2011 report, which was limited to recommendations concerning supply service offerings and demand response programs for residential and non-residential PEV customers, has been expanded herein to address delivery service rates.

Because the primary focus of the question posed by the Commission concerned "barriers," the group's review began with an assessment of the tariffed supply services currently offered by utilities (namely, fixed, seasonal and hourly supply rates) and services expected to be offered in light of recent Illinois legislation (peak-time rebate), as well as current supply service offerings made by RES in Illinois and in other states. A survey of PEV rate offerings by utilities and RESs in other states is set forth in Attachment A to this Report. After reviewing the status quo and expectations of future offerings, the group's discussions next focused on "what services are needed" or "what services are missing" in order to determine what barriers, if any, may exist to rates that could "improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging." Specifically, the threshold question posed to Team 4 was: "Are there any time-variant supply offerings or demand response programs other than what is currently available from utilities and the competitive retail market that are either needed or would help 'to improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging'?"

Delivery service matters were addressed in a similar fashion, beginning with an identification of rates or functionalities deemed desirable by a stakeholder and working those issues through to the identification of legal or regulatory barriers.

III. Consensus Opinions

A. Residential Rates

The overall consensus of the Rates working group is that encouraging PEV owners to charge their vehicles primarily during off-peak hours – whether through time-variant supply service offerings, demand response, or other load management programs – could benefit consumers and the distribution, transmission, and generation system. Participants noted that:

- Time-variant rates, whether provided by the utility or a RES, can provide PEV owners with the opportunity to save on their energy costs by moving vehicle charging and other electricity usage off peak, when electricity prices on such rates are typically lower.
- Moving the PEV charging load to off-peak hours could help defer the need to increase the capacity of electric distribution system assets, particularly in areas where several PEVs may be clustered on the same local distribution equipment.

- Moving PEV charging off-peak could lower or mitigate the impact on the marginal cost of electricity for all consumers by achieving more efficient utilization of generating capacity.
- Through battery storage, off-peak PEV charging can help integrate energy from intermittent renewable resources (*e.g.*, nighttime wind) onto the electric grid.

With respect to residential customers, the consensus opinion of the group is that there currently are no known statutory or regulatory barriers to either supply services or demand response programs that could "improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging."

1. Supply Pricing

Regarding residential supply services, the consensus was largely based on the belief that sufficient supply offerings are or will be available in the future. Specifically, the existing residential Real-Time Pricing Programs (RTP) available from the Ameren Illinois Company (AIC) and Commonwealth Edison (ComEd) today, and/or the potential for future time-variant price offerings from RESs, as evidenced by offerings available in other states meet these objectives.

The view points of stakeholders ranged from strong believers to the cautiously supportive. For example, on one end of the consensus opinion is the composite view that instead of emulating what other states have done with supply rates (which predominantly is to adopt time-of-use supply rate offerings for utilities) and pursuing second best solutions to financially incent customers to charge during off-peak hours, Illinois initially should promote its unique RTP programs to PEV owners to encourage efficient use of the distribution system and create savings opportunities. The group reached consensus that RTP, whether provided by the utility or a RES, sends the most efficient price signal to customers. Historically in Illinois, RTP has been beneficial to customers, particularly those with larger loads, as evidenced by utilities' annual reports.[2] PEV owners should also be able to choose from any myriad of dynamic price offerings the RES community may offer. RESs are fully capable of meeting any such needs and are reasonably expected to do so, as evidenced by offerings in other states.[3]

On the other end of the consensus, other parties have taken what may be characterized as a "wait and see" approach, calling for ongoing study and close monitoring of PEV owner acceptance and responsiveness to RTP and any future time-variant price offerings in the competitive retail market through regular discussions and reporting regarding status. In fact, the group agreed that further study of PEV charging and rates should be conducted

[2] For copies of the annual RTP reports filed by AIC and ComEd, see ICC Dockets 06-0617 and 06-0691, respectively.

[3] In addressing the ability of RESs utilizing AIC or ComEd's purchase of receivables with consolidated billing service to bill time-variant supply charges, both utilities confirmed that RESs utilizing the "bill ready" format can bill such charges today, assuming the appropriate metering is in place. Therefore, there are also no operational barriers to such RES offerings.

in the near-term and over the next several years, as PEVs begin to arrive in Illinois. Specifically, the group agreed that customer acceptance and utilization of, and responsiveness to, available time-variant pricing structures should be monitored and reviewed regularly. Parties also identified the need to conduct load studies of PEV charging patterns, using AMI (Advanced Metering Infrastructure) or other meters as appropriate. However, at this end of the consensus, the parties reserved judgment as to whether something more in the way of supply rate offerings should be pursued or required in the future, a view which was not held by all parties.

While no stakeholder advocated making time-variant supply pricing mandatory for EV owners at this time, the group did identify a need to incorporate time-variant supply pricing options into PEV owner education plans as soon as possible. The group agreed that customer education on pricing options should be conducted on a competitively neutral basis, encouraging PEV owners to investigate and consider the many potential benefits of all available time-variant pricing options (whether from RESs or utilities), as well as responsible charging practices (*e.g.*, charging at night during off-peak hours).

2. Demand Response

With respect to residential demand response services, consensus was again reached that there were no known regulatory or legal barriers to utility or market service offerings. Illinois utilities subject to the Commission's Integrated Distribution Company Rules (83 Ill. Adm. Code 452, Subpart B) are not prohibited from offering tariffed demand response programs, and there are no known impediments to RESs or CSPs making such offerings. While all of the potential types of demand response programs were not extensively discussed and no specific program recommendations are being offered here, parties generally viewed the peak-time rebate program mandated by recent legislation as potentially beneficial to both PEV owners and the broader goal of shifting PEV charging (and other loads) to off-peak periods. Parties also recommended that utilities and other parties explore, alongside their deployments of smart grid infrastructure, the potential for future load management programs, such as programs to develop and take advantage of the potential of grid-connected PEVs to provide ancillary grid services (*e.g.*, as frequency modulation).

Concerns were expressed by some parties regarding the potential cost effectiveness of demand response programs designed specifically to curtail PEV charging loads. In discussing the potential of the most basic of demand response programs, direct load control programs (*e.g.*, the central air conditioner cycling programs in operation today), questions were raised about the value of controlling charging. One observation was that a Level 1 charging load is similar to that of a hair dryer, and thus the cost of installing load control equipment may not be justified by the benefits. The potential load curtailment value of Level 2 (or higher) charging is more promising, but there remains uncertainty as to whether PEVs – at least in the at-home charging context – will be connected at the time when a curtailment event is called. Some stakeholders believe that it is less likely that PEV owners will charge their vehicles at their residences during time

of peak demand. Thus, the potential barriers to PEV-specific demand response programs contemplated here are of an economic nature.

B. Non-Residential Rates

Regarding non-residential supply services and demand response program, consensus was again reached that there were no known regulatory or legal barriers to utility or market service offerings. It was observed that concerns about the incremental loading of distribution and transmission assets is less of an issue with larger consumers than smaller ones in light of the facilities in place to serve such loads. From a generation asset and consumer standpoint, however, off-peak PEV charging among non-residential customers would still be desirable, leading to more efficient utilization of existing assets.

Utility supply service to larger non-residential customers has already been declared competitive in the AIC and ComEd's service territories, making hourly-pricing the only utility supply service available to AIC customers with demands of 150 kilowatts and greater and to ComEd customers with demands of 100 kilowatts and greater, respectively. Thus, it is expected that large non-residential customers managing fleet vehicle, employee or customer charging would work with their RESs to develop the appropriate pricing plans to economically accommodate the new loads, to the extent it is material, or simply heed the price signals sent by the hourly-priced default supply service from utilities. With respect to the relatively smaller non-residential customers, however, the vast majority of which are still eligible for fixed-price default supply service from utilities, education on the benefits of time-variant pricing options available from utilities and the retail market would be helpful in the same way it would be for residential customers, as previously discussed above.

C. Delivery Services

One party identified the need to enable unbundled subtractive metering, where the electrical load of a PEV may be separately tracked and distinguished from the load at any given customer premises using either on-board meters or a meter at the charging station. Such meters would not be owned by the utility. Rather they would be owned by the customers or possibly another entity, but interconnected with and relied upon by utility billing systems. As proposed, this capability is predicated upon an AMI network with a "plug and play" interoperable communications architecture that enables the application of secondary metering and layers of communication networks. The proposed objective of developing multiple layers of secondary metering applications is to create a cell phone model for residential, non-residential and public charging based on customer location and vehicle, which enables among other things:

- Separate supply price offerings for PEV usage.

- Supplier portability, where the usage associated with charging of a PEV at any location is traced back to and reflected on a single customer account.

- A tracking capability that enables advanced demand-side management techniques, including correlating PEV charging load and PEV discharging capabilities to specific distribution transformers.

- A new basis for applying road taxes to replace shortfalls stemming from corresponding decreases in gasoline tax receipts

Of these potential capabilities that would be enabled, only one was extensively discussed by parties--supplier portability, where a PEV owner could charge the vehicle at any customer premise and through subtractive metering, trace that usage and associated charges back to a single account. While no consensus was achieved on the desirability of this functionality or the associated capabilities, stakeholders concluded that there are no known legal or regulatory impediments to the adoption of a Commission policy mandating unbundled subtractive metering. In fact, the Commission has already exercised its authority to unbundle metering. (*See generally* ICC Docket No. 99-0013, Order (Oct. 4, 2000)), although not in a subtractive metering context. Nevertheless, parties did identify a general mix of potential operational, regulatory and legal barriers that may exist to the establishment of the central clearinghouse functions and protocols that would be required to settle transactions and enable supplier portability. Due to the breadth of all the different ways in which such a function and associated protocols could be structured and the time limitations, stakeholders did not attempt to address the specific barriers associated with each of the potential approaches discussed. Rather, the parties generally concluded that legislation likely would be required to fully enable supplier portability.

While many parties were intrigued by the concept, other parties questioned, among other things, what the costs of enabling the functionality would be; whether it was worth pursuing in light of potential alternatives; and whether it potentially could discourage EV purchases by making matters too complicated and costly. One party questioned the value of deviating from the current "pay at the pump" model. Further, from a utility operations perspective, parties reserved judgment on the feasibility of the functions contemplated, identifying the need to create an extensive wholesale and retail settlement process among utilities and RESs to determine who is responsible for the supply and delivery charges.

In response, the party proposing the unbundled subtractive metering indicated that this full capability is not needed today to encourage PEV adoption, but will be needed in the future to continue its growth. What is needed now, in that party's opinion, are policies that are conducive to exploring the potential capabilities and feasibility of unbundled subtractive metering.

Attachment A: Currently Available Plug-in Electric Vehicle-Specific Electricity Rates
(Last updated on December 22, 2011)

A. PLUG-IN ELECTRIC VEHICLE (PEV)-SPECIFIC TIME-OF-USE (TOU) RATES[1]

State	Electricity Provider	Rate	Available to	Conditions & Incentives[2]	Period	Summer Season[3]		Winter Season[4]	
						Price (cents per kWh)[5]	Hours	Price (cents per kWh)[6]	Hours
AL	Alabama Power	BEVT: Business Electric Vehicle - Time-of-Use[7]	- Separately-metered commercial PEVs	- Minimum service period of 5 years	On-peak	17.8	12pm-7pm (Mo-Fr)	N/A	N/A
					Intermediate peak	7.3	10am-12pm, 7pm-9pm (Mo-Fr)	7.3	7am-9pm (Mo-Fr)
					Off-peak	4.5	All other times	4.5	All other times
AK	Alaska Electric Light and Power	X1: Experimental Residential Off-Peak Electric Vehicle Charging[8]	- Separately-metered residential PEVs	- Limited to 10 customers	On-peak[9]	9.8	7am-10pm	11.9	7am-10pm
					Off-peak	5.6	All other times	5.6	All other times
AZ	Arizona Public Service Company	Experimental Rate Schedule ET-EV: Electric TOU - Electric Vehicles[10]	- PEV households[11]	- Must participate in demand response and data collection - Experimental rate ends on 12/31/2014	On-peak	24.8	12pm-7pm (Mo-Fr)	20.2	12pm-7pm (Mo-Fr)
					Off-peak	6.5	All other times	6.5	All other times
					Super off-peak	4.2	11pm-5am (Mo-Fr)	4.2	11pm-5am (Mo-Fr)
CA	Los Angeles Department of Water and Power	R-1, Rate B: Time-of-Use Service, Electric Vehicle Discount[12]	- Separately-metered residential PEVs - PEV households	- Off-peak rate increases by 2.5 cents/kWh after the first 500 kWh/month - Separately-metered PEVs eligible for $2,000 L2 EVSE rebate	High-peak	16.1	1pm-5pm (Mo-Fr)	6.5	1pm-5pm (Mo-Fr)
					Low-peak	8.1	10am-1pm, 5pm-8pm (Mo-Fr)	6.5	10am-1pm, 5pm-8pm (Mo-Fr)
					Off-peak	2.2	All other times	2.5	All other times

[1] Data are drawn from electricity providers' rate schedules and websites, as cited throughout, based on research performed by NRDC. NRDC identified an initial list of rates using data from the U.S. Department of Energy's Alternative Fuels & Advanced Vehicles Data Center (http://www.afdc.energy.gov/afdc/) and supplemented this list through additional research and information provided by individual electricity providers. This list may be an incomplete summary of PEV-specific TOU rates available from U.S. electricity providers.
[2] This column provides only on a subset of conditions and incentives applicable to each rate. When known, the table lists whether the customer or electricity provider is responsible for paying to install a second meter under a separately-metered PEV rate; however, it is not always clear from rate schedules which party bears this responsibility.
[3] Different electricity providers define the summer and winter seasons differently. Check electricity providers' rate schedules to determine specific dates of rate applicability.
[4] *See* note 3.
[5] The rates reported here are taken from reported schedules or tariffs and do not always reflect the same types of charges when compared across providers (e.g., some rates include only energy charges while others also include delivery charges). Check providers' specific rate schedules to determine the charges included in each of these rates.
[6] *See* note 5.
[7] http://www.alabamapower.com/pricing/pdf/BEVT.pdf.
[8] http://www.aelp.com/tariff/Schedule%20of%20Fees%20and%20Charges.PDF; http://www.aelp.com/rates/ourrates.htm.
[9] Alaska Electric Light and Power's rates differ between the utility's "peak season" (November to May) and "off-peak season" (June to October). In the context of the experimental PEV rate, however, the term "off-peak" is not used to describe the off-peak season, but rather the *hours* between 10pm and 7am during both the peak and off-peak seasons.
[10] http://images.edocket.azcc.gov/docketpdf/0000129728.pdf.
[11] Arizona Public Service Company has also committed to explore rates for separately-metered residential PEVs.
[12] http://www.ladwp.com/ladwp/cms/ladwp001710.jsp; http://www.ladwp.com/ladwp/cms/ladwp002056.jsp.

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State	Electricity Provider	Rate	Available to	Conditions & Incentives[2]	Period	Summer Season[3]		Winter Season[4]	
						Price (cents per kWh)[5]	Hours	Price (cents per kWh)[6]	Hours
	Pacific Gas and Electric	E-9: Experimental Residential Time-of-Use Service for Low Emission Vehicle Customers *(Proposed Changes)*[13]	- Separately-metered residential PEVs - PEV households	- Monthly customer charge covers separate metering - Enrollment limited to 30,000 customers - Experimental rate ends on 12/31/2014	Peak	38.5	2pm-9pm (Mo-Su), 3pm-7pm (Sa, Su)	27.9	2pm-9pm (Mo-Su), 3pm-7pm (Sa, Su)
					Part-peak	21.4	7am-2pm, 9pm-11pm (Mo-Fr), 7am-3pm, 7pm-11pm (Sa, Su)	17.4	7am-2pm, 9pm-11pm (Mo-Fr), 7am-3pm, 7pm-11pm (Sa, Su)
					Off-peak	11.0	All other times	11.3	All other times
	San Diego Gas and Electric	EV-TOU: Domestic Time-of-Use for Electric Vehicle Charging[14]	- Separately-metered residential PEVs	- Customer pays to install PEV meter socket - Minimum service period of 1 year	On-peak	25.7	12pm-8pm	17.5	12pm-8pm
					Off-peak	16.7	All other times	16.9	All other times
					Super off-peak	14.4	12am-5am	14.6	12am-5am
		EV-TOU2: Domestic Time-of-Use for Households with Electric Vehicles[15]	- PEV households	- Minimum service period of 1 year	On-peak	25.7	12pm-6pm	17.5	12pm-6pm
					Off-peak	16.7	All other times	16.9	All other times
		EPEV-X, EPEV-Y, EPEV-Z: Domestic Experimental Plug-in Electric Vehicle Service[16]	- Separately-metered residential PEVs	- Limited to 1,000 Nissan Leaf owners - Customer receives free L2 EVSE - Random assignment to an experimental rate group (X, Y, or Z) - Experimental rates will end on or before 11/30/2012	On-peak (X/Y/Z)	27.1 (X) 29.3 (Y) 38.5 (Z)	12pm-8pm	17.8 (X) 25.1 (Y) 34.2 (Z)	12pm-8pm
					Off-peak (X/Y/Z)	16.5 (X) 18.5 (Y) 15.4 (Z)	All other times	17.1 (X) 16.7 (Y) 13.7 (Z)	All other times
					Super off-peak (X/Y/Z)	13.9 (X) 7.7 (Y) 6.7 (Z)	12am-5am	14.3 (X) 8.3 (Y) 7.1 (Z)	12am-5am
	Sacramento Municipal Utility District	R: Residential Service, Optional Time-of-Use Rate Option 1, Plug-in Electric Vehicle Option[17]	- Sub-metered residential PEVs - Separately-metered residential PEVs	- Utility provides a sub-meter unless customer pays to install a separate PEV meter - $7.20 residential TOU service charge waived	On-peak	24.0	2pm-8pm (Mo-Fr)	10.8	7am-10am, 5pm-8pm (Mo-Fr)
					Off-peak[18]	8.4	All other times	7.5	All other times

[13] Table reflects proposed changes submitted by Pacific Gas and Electric (PG&E) to the California Public Utilities Commission (CPUC) on September 26, 2011, in response to a CPUC order. PG&E's current existing experimental rate uses both a TOU and a tiered rate system, but the CPUC has ordered PG&E to simplify the rate by eliminating the tiered component. http://www.pge.com/nots/rates/tariffs/tm2/pdf/ELEC_3910-E.pdf.
[14] http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EV-TOU.pdf.
[15] http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EV-TOU-2.pdf.
[16] http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EPEV-X.pdf; http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EPEV-Y.pdf; http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EPEV-Z.pdf.
[17] http://www.smud.org/en/residential/rates/Documents/1-R.pdf.

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State	Electricity Provider	Rate	Available to	Conditions & Incentives[2]	Period	Summer Season[3]		Winter Season[4]	
						Price (cents per kWh)[5]	Hours	Price (cents per kWh)[6]	Hours
	Southern California Edison	TOU-EV-1: Domestic Time-of-Use Electric Vehicle Charging[19]	- Separately-metered residential PEVs	- Utility provides a separate meter - Minimum service period of 1 year	On-peak	27	12pm-9pm	21	12pm-9pm
					Off-peak	12	All other times	12	All other times
		TOU-D-TEV: Time-of-Use-Domestic Tiered Electric Vehicle Charging[20]	- PEV households	- Two-tiered rate: (T1) up to 130% of baseline use, (T2) above 130% of baseline use - Includes peak-time rebate (not shown)	On-peak (T1/T2)	19 (T1) 53 (T2)	10am-6pm (Mo-Fr)	13 (T1) 25 (T2)	10am-6pm (Mo-Fr)
					Off-peak (T1/T2)	13 (T1) 24 (T2)	All other times	12 (T1) 23 (T2)	All other times
					Super off-peak (T1/T2)	10 (T1) 15 (T2)	12am-6am	10 (T1) 16 (T2)	12am-6am
GA	Georgia Power	TOU-PEV-1: Time of Use - Plug-in Electric Vehicle[21]	- PEV households	- Minimum service period of 1 year	On-peak	19.3	2pm-7pm (Mo-Fr)	Same as summer rates	
					Off-peak	5.8	All other times		
					Super off-peak	1.3	11pm-7am		
HI	Hawaiian Electric	Residential TOU EV: Residential Time-of-Use Service with Electric Vehicle Pilot[22]	- PEV households	- Three-tiered rate: (T1) first 350 kWh, (T2) 350-1,200 kWh, (T3) after 1,200 kWh - Utility may require load control - Limited to 1,000 customers on Oahu, 300 in Maui County, and 300 on Hawaii Island (across all experimental PEV rates) - Experimental rate ends on 9/30/2013	Priority-peak (T1/T2/T3)	22.1 (T1) 22.9 (T2) 23.7 (T3)	5pm-9pm (Mo-Fr)	Same as summer rates	
					Mid-peak (T1/T2/T3)	19.1 (T1) 19.9 (T2) 20.7 (T3)	7am-5pm (Mo-Fr), 7am-9pm (Sat-Sun)		
					Off-peak (T1/T2/T3)	11.1 (T1) 11.9 (T2) 12.7 (T3)	All other times		
		EV-R: Residential Electric Vehicle Charging Service Pilot[23]	- Separately-metered residential PEVs	- Customer pays to install meter socket - Utility may require and implement load control - See *Residential TOU EV* rate above for participant limitations - Experimental rate ends on 9/30/2013	On-peak	19.8	7am-9pm (Mo-Fr)	Same as summer rates	
					Off-peak	11.1	All other times		

[18] Off-peak rates reflect credits of 2.71 cent/kWh and 2.43 cent/kWh for PEVs in the summer and winter seasons, respectively, resulting in charges below non-PEV TOU rates. See *ibid*.
[19] http://www.sce.com/NR/sc3/tm2/pdf/ce114-12.pdf; http://www.sce.com/PowerandEnvironment/PEV/rate-charging-options.htm.
[20] http://www.sce.com/NR/sc3/tm2/pdf/CE324.pdf; http://www.sce.com/PowerandEnvironment/PEV/rate-charging-options.htm.
[21] http://www.georgiapower.com/pricing/pdf/2.30_TOU-PEV-1.pdf.
[22] http://www.heco.com/portal/site/heco/menuitem.8e4610c1e23714340b4c0610c510b1ca/?vgnextoid=f4dedb284f26b210VgnVCM1000005c011bacRCRD&vgnextfmt=default; http://www.heco.com/vcmcontent/StaticFiles/FileScan/PDF/EnergyServices/Tarrifs/HECO/HECORatesResidentialTOUEVPilot04-13-2011.pdf.
[23] http://www.heco.com/portal/site/heco/menuitem.8e4610c1e23714340b4c0610c510b1ca/?vgnextoid=f4dedb284f26b210VgnVCM1000005c011bacRCRD&vgnextfmt=default; http://www.heco.com/vcmcontent/StaticFiles/FileScan/PDF/EnergyServices/Tarrifs/HECO/HECORatesEV-RPilot04-13-2011.pdf.

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State	Electricity Provider	Rate	Available to	Conditions & Incentives[2]	Period	Summer Season[3]		Winter Season[4]	
						Price (cents per kWh)[5]	Hours	Price (cents per kWh)[6]	Hours
		EV-C: Commercial Electric Vehicle Charging Service Pilot[24]	- Separately-metered commercial PEVs[25]	- See *Residential TOU EV* rate above for participant limitations - Experimental rate ends on 9/30/2013	On-peak	17.9	7am-9pm (Mo-Fr)	Same as summer rates	
					Off-peak	11.1	All other times		
IN	Indianapolis Power and Light	EVX: Experimental Time of Use Service for Electric Vehicle Charging on Customer Premises[26]	- Separately-metered residential PEVs	- Utility will provide L2 EVSE and a separate meter to the first 150 customers - Minimum service period of 1 year - Experimental rate ends on 1/18/2013	Peak	12.2	2pm-7pm (Mo-Fr)	6.9	8am-8pm
					Mid-peak	5.5	10am-2pm, 7pm-10pm (Mo-Fr), 10am-10pm (Sat-Sun)	N/A	N/A
					Off-peak	2.3	All other times	2.8	All other times
	Northern Indiana Public Service Company	Rider 684: Plug-In Electric Vehicle Off-Peak Charging Rider (Pilot Program) (*Proposed*)[27]	- Separately-metered residential PEVs	- Utility will reimburse up to $1,650 to 250 customers for EVSE and separate metering	On-peak	9.8[28]	6am-10pm	Same as summer rates	
					Off-peak	0[29]	All other times		
KY	Kentucky Utilities	LEV: Low Emission Vehicle Service[30]	- PEV households	- Limited to 100 customers - Experimental rate ends on 7/31/2013	Peak	13.1	1pm-7pm (Mo-Fr)	13.1	10pm-6am (Mo-Fr)
					Intermediate	6.8	10am-1pm, 7pm-10pm (Mo-Fr)	6.8	12pm-10pm (Mo-Fr)
					Off-peak	4.7	All other times	4.7	All other times
	Louisville Gas and Electric	LEV: Low Emission Vehicle Service[31]	- PEV households	- Limited to 100 customers - Experimental rate ends on 7/31/2013	Peak	13.3	1pm-7pm (Mo-Fr)	13.3	10pm-6am (Mo-Fr)
					Intermediate	6.9	10am-1pm, 7pm-10pm (Mo-Fr)	6.9	12pm-10pm (Mo-Fr)
					Off-peak	4.9	All other times	4.9	All other times

[24] http://www.heco.com/portal/site/heco/menuitem.8e4610c1e23714340b4c0610c510b1ca/?vgnextoid=f4dedb284f26b210VgnVCM1000005c011bacRCRD&vgnextfmt=default; http://www.heco.com/vcmcontent/StaticFiles/FileScan/PDF/EnergyServices/Tarrifs/HECO/HECOSchEV-CPilot04-13-2011.pdf.
[25] Table shows prices for commercial customers with PEV loads below 5,000 kWh per month and that do not exceed 25 kW. Customers that exceed these levels are subject to different pricing under this rate. *See ibid*.
[26] http://www.iplpower.com/library/IPL/Tariff%20Changes%202011/Rate%20EVX%20effective%2001.19.11.pdf.
[27] This proposed rider is under review by the Indiana Utility Regulatory Commission (IURC). Information provided by Northern Indiana Public Service Company (NIPSCO) (http://www.nipsco.com).
[28] Based on proposed settlement to IURC case no. 43969 for Rate 611 (Rate for Electric Service Residential) and Rate 612 (Rate for Electric Service Single Family Residential - Heat Pump). *See* https://myweb.in.gov/IURC/eds/Modules/Ecms/Cases/Docketed_Cases/ViewDocument.aspx?DocID=0900b6318016ffbe.
[29] If approved, the rider would provide PEV customers with a rebate equal to the *energy charge* (2.9 cents plus the Fuel Cost Charge and all applicable riders) for each kWh used for off-peak PEV charging. Information provided by NIPSCO (http://www.nipsco.com).
[30] http://www.lge-ku.com/ev/ku_lev_tariff.pdf; http://www.lge-ku.com/ev/qa.asp.
[31] http://www.lge-ku.com/ev/lge_lev_tariff.pdf; http://www.lge-ku.com/ev/qa.asp.

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State	Electricity Provider	Rate	Available to	Conditions & Incentives[2]	Period	Summer Season[3]		Winter Season[4]	
						Price (cents per kWh)[5]	Hours	Price (cents per kWh)[6]	Hours
MD	Baltimore Gas and Electric	*PEV TOU rate under development*[32]							
MI	Consumers Energy	REV-1: Residential Home and Plug-in Electric Vehicle Time-of-Day[33]	- PEV households	- N/A	On-peak	18.6	2pm-6pm (Mo-Fr)	10.5	7am-11pm (Mo-Fr)
					Mid-peak	12.0	7am-2pm, 6pm-11pm (Mo-Fr)	N/A	N/A
					Off-peak	5.4	All other times	5.4	All other times
		REV-2: Residential Plug-in Electric Vehicle Only Time-of-Day[34]	- Separately-metered residential PEVs	- Limited to 2,500 customers - Utility will reimburse up to $2,500 for L2 EVSE and separate metering	On-peak	18.6	2pm-6pm (Mo-Fr)	10.5	7am-11pm (Mo-Fr)
					Mid-peak	12.0	7am-2pm, 6pm-11pm (Mo-Fr)	N/A	N/A
					Off-peak	5.4	All other times	5.4	All other times
	Detroit Edison	D1.9: Experimental Electric Vehicle Rate (Option 1)[35]	- Separately-metered residential PEVs - PEV households	- Limited to 2,500 customers - Utility will reimburse up to $2,500 for L2 EVSE and separate metering	On-peak	18.2	9am-11pm (Mo-Fr)	Same as summer rates	
					Off-peak	7.7	All other times		
	Indiana Michigan Power	RS-OPES/PEV: Residential Off-peak Energy Storage/Plug-in Electric Vehicle[36]	- Separately-metered residential PEVs - PEV households	- Utility will reimburse up to $2,500 to 250 customers for L2 EVSE and separate metering	On-peak	14.1	7am-9pm (Mo-Fr)	Same as summer rates	
					Off-peak	3.9	All other times		
	Lansing Board of Water and Light	Rate No. 22: Residential PEV Charging Service[37]	- Separately-metered residential PEVs	- N/A	On-peak	13.6	7am-11pm (Mo-Fr)	Same as summer rates	
					Off-peak	5.3	All other times		
NV	Nevada Power	RHEVRR - TOU: Residential Hybrid Electric Vehicle Recharge Rider - Time-of-Use[38]	- PEV households	- Customers choose a smaller peak ratio and longer summer (Option A), or a larger peak ratio and shorter summer (Option B) - Minimum service period of 1 year	On-peak (A/B)	29.8 (A) 47.0 (B)	1pm-7pm	N/A	N/A
					Off-peak (A/B)	7.8 (A) 6.8 (B)	All other times	6.6 (A) 5.7 (B)	All other times
					Special HEV recharge period (A/B)	6.3 (A) 5.5 (B)	10pm-6am	5.2 (A) 4.4 (B)	10pm-6am

[32] *See* http://www.bge.com/waystosave/residential/resguidestips/pluginelectricvehicles/chargingyourphev/Pages/default.aspx.
[33] http://efile.mpsc.state.mi.us/efile/docs/16446/0002.pdf.
[34] *Ibid*.
[35] http://www.dteenergy.com/pdfs/detroitEdisonTariff.pdf; http://efile.mpsc.state.mi.us/efile/docs/16406/0003.pdf.
[36] http://efile.mpsc.state.mi.us/efile/docs/16496/0002.pdf.
[37] http://www.lbwl.com/rates/2011_ElectricRate22.pdf.
[38] http://nvenergy.com/home/paymentbilling/timeofuse.cfm; http://www.nvenergy.com/company/rates/snv/schedules/images/RHEVRR_South.pdf.

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State	Electricity Provider	Rate	Available to	Conditions & Incentives[2]	Period	Summer Season[3]		Winter Season[4]	
						Price (cents per kWh)[5]	Hours	Price (cents per kWh)[6]	Hours
		GSHEVRR - TOU: General Service Hybrid Electric Vehicle Recharge Rider - Time-of-Use[39]	- Separately-metered commercial PEVs[40]	- Utility provides a separate meter - Minimum service period of 1 year	On-peak	27.5	1pm-7pm	N/A	N/A
					Off-peak	5.8	All other times	5.1	All other times
					Special HEV recharge	5.1	10pm-6am	4.5	10pm-6am
	Sierra Pacific Power	OD-RHEVRR - TOU: Residential Hybrid Electric Vehicle Recharge Rider - Time-of-Use[41]	- PEV households	- Minimum service period of 1 year	On-peak	40.2	1pm-9pm (Mo-Fr)	10.2	5pm-9pm
					Mid-peak	21.8	10am-1pm, 6pm-9pm (Mo-Fr)	N/A	N/A
					Off-peak	7.5	All other times	7.5	All other times
					Special HEV recharge	6.7	10pm-6am	6.7	10pm-6am
		OGS-HEVRR - TOU: General Service Hybrid Electric Vehicle Recharge Rider - Time-of-Use[42]	- Separately-metered commercial PEVs[43]	- Utility provides a separate meter - Minimum service period of 1 year	On-peak	36.0	1pm-9pm (Mo-Fr)	10.3	5pm-9pm
					Mid-peak	20.1	10am-1pm, 6pm-9pm (Mo-Fr)	N/A	N/A
					Off-peak	6.9	All other times	6.9	All other times
					Special HEV recharge period	6.1	10pm-6am	6.1	10pm-6am
OH	American Electric Power	PEV: Plug-in Electric Vehicle Tariff *(Proposed)*[44]	- Separately-metered residential PEVs - PEV households	- Limited to 200 customers - Utility will rebate up to $2,500 for L2 EVSE and separate metering	On-peak[45]	9.3	7am-9pm (Mo-Fr)	Same as summer rates	
					Off-peak[46]	1.3	All other times		
OR	*State currently investigating PEV TOU rates*[47]								

[39] http://www.nvenergy.com/company/rates/snv/schedules/images/GSHEVRR_South.pdf; http://www.nvenergy.com/brochures_arch/rate_schedules/np_com_rate.pdf.
[40] Table shows prices for commercial customers with PEV loads below 3,500 kWh per month. Customers that exceed this level are subject to different pricing. *See ibid*.
[41] http://www.nvenergy.com/home/paymentbilling/timeofusenorth.cfm; http://www.nvenergy.com/company/rates/snv/schedules/images/RHEVRR_South.pdf.
[42] http://nvenergy.com/company/rates/nnv/electric/schedules/images/OGS_HEVRR_TOU.pdf; http://www.nvenergy.com/brochures_arch/rate_schedules/spp_nv_commrates.pdf.
[43] Table shows prices for commercial customers with PEV loads below 10,000 kWh per month and that do not exceed 50 kW. Customers that exceed these levels are subject to different pricing. *See ibid*.
[44] This rate is before the Ohio Public Utilities Commission, as part of American Electric Power (AEP)'s proposed electric security plan. *See* http://www.puco.ohio.gov/puco/index.cfm/consumer-information/consumer-topics/american-electric-power-ohioe28099s-electric-security-plan/; https://aepohio.com/global/utilities/lib/docs/info/news/rates/OH/Sloneker_testimony_1232011_Final.pdf. On September 7, 2011, parties to the case stipulated to a settlement that, if approved, would, among other things, allow AEP to establish this PEV tariff. *See* http://dis.puc.state.oh.us/ViewImage.aspx?CMID=A1001001A11I07B05057D70465.
[45] AEP's proposed PEV rate would apply the utility's existing residential energy storage rate, which is based on TOU, to PEVs. *Ibid*. The table lists the energy storage TOU rate for AEP's Columbus Southern Power (CSP). https://www.aepohio.com/global/utilities/lib/docs/ratesandtariffs/Ohio/2011-10-14-CSP-StandardTariffNo7.pdf. The proposed PEV rate would also apply to Ohio Power (OP), which AEP also owns and has proposed to merge with CSP. *See* https://aepohio.com/global/utilities/lib/docs/info/news/rates/OH/ESPAPPLICATIONfinal.pdf. Currently, OP's residential energy storage rates are 8.9 and 1.2 cents per kWh for on-peak and off-peak electricity usage, respectively.
[46] *See* note **Error! Bookmark not defined.**.
[47] The Oregon Public Utilities Commission (OPUC) is investigating PEV rate structures in docket UM 146. OPUC staff has recommended that utilities be required to offer PEV TOU rates. *See* http://apps.puc.state.or.us/edockets/docket.asp?DocketID=15929; http://edocs.puc.state.or.us/efdocs/HAC/um1461hac16325.pdf.

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State	Electricity Provider	Rate	Available to	Conditions & Incentives[2]	Period	Summer Season[3]		Winter Season[4]	
						Price (cents per kWh)[5]	Hours	Price (cents per kWh)[6]	Hours
TX	Reliant Energy	EV Owner's Plan with e-Sense™ Time-of-Use[48]	- PEV households	- Minimum service period of 1 year	Summer peak	11.9	4pm-6pm (Mo-Fr)	N/A	N/A
					Standard	10.9	12pm-4pm, 6pm-8pm (Mo-Fr)	10.9	6am-9am, 6pm-9pm (Mo-Fr)
					Off-peak	9.1	All other times	9.1	All other times
	TXU	Energy Power*Smart* PM 24[SM 49]	- Residential customers[50]	- Minimum service period of 2 years	Peak	21.9	1pm-6pm (Mo-Fr)	N/A	N/A
					Off-peak	9.2	All other times	9.2	All other times
					Nighttime	6.8	10pm-6am	6.8	10pm-6am
VA	Virginia Dominion	1EV: Residential Service with Electric Vehicle Charging (Experimental)[51]	- PEV households	- Limited to 750 customers - Minimum service period of 1 year - Experimental rate ends on 11/30/2014	On-peak	11.6	1pm-7pm	6.7	6am-11am, 5pm-10pm
					Intermediate	5.9	10am-1pm, 7pm-10pm	N/A	N/A
					Off-peak	3.7	All other times	4.2	All other times
					Super off-peak	0.4	1am-5am	1.4	1am-5am
		EV: Residential Electric Vehicle Charging (Experimental)[52]	- Separately-metered residential PEVs	- Limited to 750 customers - Minimum service period of 1 year - Experimental rate ends on 11/30/2014	On-peak	13.3	6am-10pm	Same as summer rates	
					Off-peak	3.9	All other times		
					Super off-peak	0.7	1am-5am		
WA	Seattle City Light	*Currently investigating PEV TOU rates*[53]							

[48] This plan is not currently listed online, but is available to customers by phone. Information provided by Reliant Energy (http://www.reliant.com).
[49] http://www.txu.com/about/press-releases/2011/20111117-txu-energy-offers-deep-nighttime-discounts.aspx.
[50] TXU is marketing this rate to PEV households, but, based on the information available online, the rate does not appear to be restricted to PEV households. *See* http://www.txu.com/en/residential/promotions/dsm/PowerSmart-information.aspx.
[51] http://www.dom.com/dominion-virginia-power/customer-service/rates-and-tariffs/pdf/vab1ev.pdf.
[52] http://www.dom.com/dominion-virginia-power/customer-service/rates-and-tariffs/pdf/vabev.pdf.
[53] *See* http://www.seattle.gov/light/electricvehicles/.

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B. NON-TOU PEV-SPECIFIC RATES[54]

State	Electricity Provider	Rate	Available to	Description
CA	Alameda Municipal Power	EV-X: Experimental Electric Vehicle Charging Discount[55]	- PEV households - Commercial PEVs - Separately-metered commercial PEV fleets	$15 and $21 per month discounts, respectively, for customers with light duty and medium duty PEVs (applied as a 6 cent per kWh discount on assumed monthly charging loads of 250 kWh and 350 kWh, respectively) or 50% discount on the metered kWh of a separately-metered fleet vehicle charging facility. Customers must agree to charge their PEVs during weekday off-peak hours (8pm-8am) and weekends.[56]
IN	Indianapolis Power & Light	EVP: Experimental Service for Electric Vehicle Charging on Public Premises[57]	- Public charging	Flat fee of $2.50 per charge at public charging facilities. Experimental rate ends on January 18, 2013.
MI	Consumers Energy	REV-3: Residential Plug-in Electric Vehicle Only Monthly[58]	- Separately-metered residential PEVs	$35 per month for the first 300 kWh, then 15.3 cents per kWh during the summer (10.5 cents per kWh during the winter) for each additional kWh used during the month. Limited to 250 customers. Utility will reimburse up to $2,500 for L2 EVSE and separate metering.
	DTE	D1.9: Experimental Electric Vehicle Rate (Option 2)[59]	- Separately-metered residential PEVs	$40 per month. Limited to 250 customers. Utility will reimburse up to $2,500 for L2 EVSE and separate metering.
TX	Green Mountain Energy	Pollution Free[sm] Electric Vehicle[60]	- PEV households[61]	100% wind energy plan for PEV households. Minimum service period of 1 year.

[54] Data are drawn from electricity providers' rate schedules and websites, as cited throughout, based on research performed by NRDC. NRDC identified an initial list of rates using data from the U.S. Department of Energy's Alternative Fuels & Advanced Vehicles Data Center (http://www.afdc.energy.gov/afdc/) and supplemented this list through additional research and information provided by individual electricity providers. This list may be an incomplete summary of PEV-specific non-TOU rates available from U.S. electricity providers.
[55] http://www.alamedamp.com/assets/pdf/rates/7-1-2011/EVX.pdf.
[56] Although customers must "agree" to charge their PEVs during off-peak hours, discounts are not applied based on measured off-peak charging, so this is not a TOU rate. See *Ibid*.
[57] http://www.iplpower.com/library/IPL/Tariff%20Changes%202011/Rate%20EVP%20effective%2001.19.11.pdf.
[58] http://efile.mpsc.state.mi.us/efile/docs/16446/0002.pdf.
[59] http://www.dteenergy.com/pdfs/detroitEdisonTariff.pdf; http://efile.mpsc.state.mi.us/efile/docs/16406/0003.pdf.
[60] *See* http://www.greenmountain.com/products-and-rates/electric-vehicles; http://www.greenmountainenergy.com/texas-centerpoint.
[61] Green Mountain Energy also offers other 100% wind products to non-PEV households, but this specific plan is restricted to PEV households. *See id.*